What's a Boiler?

Large buildings in cooler climates commonly heat building spaces and hot water with boilers. Years ago these were large mysterious inanimate objects in the basement that sometimes hissed and gurgled as the only clear indication they were working. Modern boilers are much more compact by comparison. Then and now they are far more complicated than they appear, and merit great respect. Think of your mother's or grandmother's pressure cooker -- Fearfully regarded, they are a kitchen appliance rarely used today. Because of their potential dangers, boilers are regulated devices in every State. Because of their complexity, we asked our boiler experts at Hartford Steam Boiler Inspection & Insurance Co. (HSB), to tell us more about boilers. – **Insurance Board**

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Boiler Types, Uses and Maintenance --

A boiler is a closed vessel in which water or other fluid is heated under pressure. The primary function of a boiler is simply to provide energy external to itself by heating water or generating steam. The steam or hot fluid is then circulated out of the boiler for use in various manufacturing processes or heating applications. Construction of boilers is mainly limited to steel and cast iron. Sources of heat for the boiler can be the combustion of fuels such as wood, coal, oil or natural gas. Electric boilers use resistance or immersion type heating elements.

From that definition, each State has created its own rules/laws that pertain to specific boilers, sizes and inspection frequency. **Most States have a one year inspection frequency for high pressure boilers and two year inspection frequency for low pressure boilers.** For practical purposes a high pressure boiler is a boiler that generates steam over 15 psi pressure. A low pressure boiler is a boiler that generates steam, 15 psi pressure and under, or hot water less than 160 psi for heating or domestic hot water use. See **State Regulation**, below.

High pressure boilers are used principally for manufacturing/processing purposes. However, low pressure boilers (steam 15 psi and under or hot water under 160 psi) for building heating purposes are common in churches and other public buildings. Another possible low pressure boiler use is domestic hot water, under 160 psi for a large kitchen/cafeteria or residential applications. A forced hot air heating system, found in most residences is not a boiler. However a "forced hot water furnace" is probably a low pressure hot water heating system, a type boiler that may be subject to inspection and licensing.

Primarily based on geographical location, building heat for large buildings is provided by a boiler system. The boiler heating system is either a steam or a hot water heating system, either one classified as "low pressure". A steam system circulates steam through the piping to radiators located in the space being heated, or to an air handler (ventilation system) which blows air across a steam filled coil heating the air and discharging it into the building. A hot water heating system

also has radiators but these are low profile radiators that are close to the floor and positioned against the wall (frequently called baseboard radiator). Hot water heating may also use an air handler system to deliver the hot air.

For lessons on maintenance, go to the **Hartford Steam Boilers website,** then the I**nformation Resources** page: http://www.hsb.com/HSBGroup/Videos.aspx On that page are several recorded webinars on the subject of boilers, electrical equipment and air conditioning . For basic lessons in boiler maintenance see: **"Don't Be Left in the Cold**". (Give the session a few moments to open.)

State Regulation & Inspection Requirements–

Churches and related buildings such as social halls, offices, classrooms and residential housing, would all be classified as **"Commercial and/or Institutional Operations"** for the purpose of boiler regulation

State laws vary but for a starting point most states require inspection for the following boilers:

- **All boilers used for manufacturing processes or building heat, both steam and hot water types.** Manufacturers will state the word "Boiler" on the equipment ID label and with that word, inspection is likely required.
- **All water heaters having 120 gallons or greater storage capacity and/or of 200,000 btuh or greater of burner heat input**. If either or both criteria are met then inspection is required. For water heaters that are classified as "boilers", the manufacturer's label can be viewed to assist in determining if the size of the water heater exceeds one of the above sizing constraints.

For locations that use large quantities of hot water (large cafeteria/kitchen operations or residential apartment, nursing facilities, etc.) the hot water heater may be classified as a boiler. While many of these hot water supply boilers have an appearance of the type found in a residence, the sizing requirement listed above must be met to qualify as a boiler.

HSB operates principally as an insurer of boilers and factory equipment. It is also licensed by the States to conduct "jurisdictional inspections" on behalf of the States.

The HSB Inspection Hotline is equipped to take information necessary to set up an inspection and answer general jurisdiction-related questions. If the depth of the question is beyond their authority it will be forwarded directly to an Inspector familiar with that specific State jurisdiction.

When you call for an inspection, reference the Insurance Board HSB Account Number on all transactions:

HSB Inspection Hotline
Phone Number: (800)-333-4677
FAX Number: (484) 582-1838
Email Address: NSCInsp_Hotline@hsb.com
(8:00 AM to 8:00 PM, M-F Eastern Standard Time)
Account Number for Insurance Board Clients: 5600361